What is claimed is:

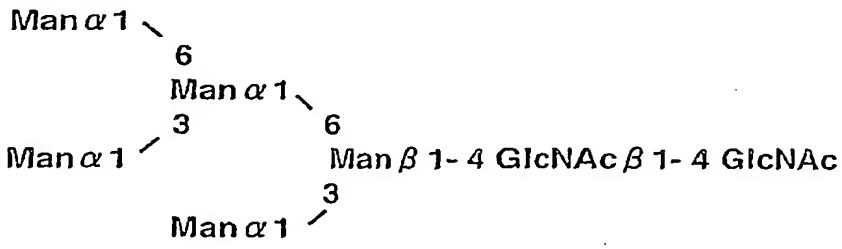
1. A process for producing a methylotrophic yeast capable of producing a mammalian type sugar chain, which comprises the steps of:

1) disrupting an *OCH1* gene which encodes α-1,6-mannosyl transferase, in a methylotrophic yeast; and

2) introducing an α-1,2-mannosidase gene into the yeast and expressing it therein.

2. A process according to claim 1, wherein the mammalian type sugar chain is represented by the following structural formula ($Man_5GlcNAc_2$):

Structural Formula 2



3. A process according to claim 1 or 2, wherein the methylotrophic yeast belongs to the genus *Pichia*, *Hansenula*, *Candida*, or *Ogataea*.

4. A process according to claim 1 or 2, wherein the methylotrophic yeast is *Ogataea minuta*.

5. A process according to any one of claims 1 to 4, wherein the methylotrophic yeast is a strain from *Ogataea minuta* strain IFO 10746.

6. A process according to any one of claims 1 to 5, wherein the α-1,2-mannosidase gene is expressed under the control of a methanol-inducible promoter.

7. A process according to claim 6, wherein the methanol-inducible promoter is a promoter of an alcohol oxidase (*AOX*) gene.

8. A process according to claim 7, wherein the alcohol oxidase (*AOX*) gene is from *Ogataea minuta*.

9. A process according to any one of claims 1 to 8, characterized in that the α-1,2-mannosidase gene to be introduced is attached to a yeast endoplasmic reticulum (ER) retention signal (HEDL).

10. A process according to any one of claims 1 to 9, wherein the α-1,2-mannosidase gene is from *Aspergillus saitoi*.

11. A process according to any one of claims 1 to 10, which further comprises a step of transforming a heterologous gene into the yeast.

12. A process according to claim 11, wherein the heterologous gene is transferred using an expression vector and is expressed in the yeast.

13. A process according to claim 12, wherein the expression vector comprises a methanol-inducible promoter.

14. A process according to claim 13, wherein the methanol-inducible promoter is a promoter of an alcohol oxidase (*AOX*) gene.

15. A process according to claim 14, wherein the alcohol oxidase (*AOX*) gene is from *Ogataea minuta*.

16. A process according to claim 12, wherein the expression vector comprises a promoter of a glyceraldehyde-3-phosphate dehydrogenase (*GAPDH*) gene.

17. A process according to any one of claims 11 to 16, wherein 20 % or more of N-linked sugar chains produced of the protein encoded by the heterologous gene is the mammalian type sugar chain represented by Structural Formula 2.

18. A process according to any one of claims 11 to 16, wherein 40 % or more of N-linked sugar chains produced of the protein encoded by the heterologous gene is the mammalian type sugar chain represented by Structural Formula 2.

19. A process according to any one of claims 11 to 16, wherein 60 % or more of N-linked sugar chains produced of the protein encoded by the heterologous gene is the mammalian type sugar chain represented by Structural Formula 2.

20. A process according to any one of claims 11 to 16, wherein 80 % or more of N-linked sugar chains produced of the protein encoded by the heterologous gene is the mammalian type sugar chain represented by Structural Formula 2.

21. A process according to any one of claims 11 to 20, wherein the protein encoded by the heterologous gene is from humans.

22. A process according to any one of claims 11 to 21, wherein the protein encoded by the heterologous gene is an antibody or a fragment thereof.

23. A methylotrophic yeast produced by a process according to any one of claims 1 to 22.

24. A process for producing a protein encoded by a heterologous gene, wherein the process comprises culturing the methylotrophic yeast of claim 23 in a medium to obtain the protein encoded by the heterologous gene comprising a mammalian type sugar chain from the culture.

25. A protein comprising a mammalian type sugar chain encoded by the heterologous gene, wherein the protein is produced by the process of claim 24.

26. An orotidine-5'-phosphate decarboxylase (*URA3*) gene DNA encoding an amino acid sequence substantially represented by SEQ ID NO:16.

27. A URA*3* gene DNA comprising a nucleotide sequence substantially represented by SEQ ID NO:15.

28. A recombinant expression vector substantially comprising the gene of claim 26 or 27 or a fragment thereof as a selectable marker.

29. An *Ogataea minuta* strain transformed with the recombinant expression vector of claim 28.

30. An *Ogataea minuta* strain according to claim 29, the strain being from the strain IFO 10746.

31. A phosphoribosyl-amino-imidazole succinocarboxamide synthase (*ADE1*) gene DNA encoding an amino acid sequence substantially represented by SEQ ID NO:28.

32. An *ADE1* gene DNA comprising a nucleotide sequence substantially represented by SEQ ID NO:27.

33. A recombinant expression vector substantially comprising the gene of claim 31 or 32 or a fragment thereof as a selectable marker.

34. An *Ogataea minuta* strain transformed with the recombinant expression vector of claim 33.

35. An *Ogataea minuta* strain according to claim 34, the strain being from the strain IFO 10746.

36. An imidazole-glycerol-phosphate dehydratase (*HIS3*) gene DNA encoding an amino acid sequence substantially represented by SEQ ID NO:100.

37. An *HIS3* gene DNA comprising a nucleotide sequence substantially represented by SEQ ID NO:99.

38. A recombinant expression vector substantially comprising the gene DNA of claim 36 or 37 or a fragment thereof as a selectable marker.

39. A *Ogataea minuta* strain transformed with the recombinant expression vector of claim 38.

40. An *Ogataea minuta* train according to claim 39, the strain being from the strain IFO 10746.

41. A 3-isopropylmalate dehydrogenase (*LEU2*) gene DNA encoding an amino acid sequence substantially represented by SEQ ID NO:108.

42. A *LEU2* gene DNA comprising a nucleotide sequence substantially represented by SEQ ID NO:107.

43. A recombinant expression vector substantially comprising the gene of claim 41 or 42 or a fragment thereof as a selectable marker.

44. An *Ogataea minuta* strain transformed with the recombinant expression vector of claim 43.

45. An *Ogataea minuta* stain according to claim 44, the strain being from the IFO 10746.

46. An α-1,6-mannosyl transferase (*OCH1*) gene DNA encoding an amino acid sequence substantially represented by SEQ ID NO:43.

47. An *OCH1* gene DNA comprising a nucleotide sequence substantially represented by SEQ ID NO:42.

48. An *Ogataea minuta* strain wherein the gene of claim 46 or 47 has been disrupted.

49. An *Ogataea minuta* strain according to claim 48, the strain being from the strain IFO 10746.

50. A proteinase A (*PEP4*) gene DNA encoding an amino acid sequence substantially represented by SEQ ID NO:52.

51. A *PEP4* gene DNA comprising a nucleotide sequence substantially represented by SEQ ID NO:51.

52. An *Ogataea minuta* strain wherein the gene of claim 50 or 51 has been disrupted.

53. An *Ogataea minuta* strain according to claim 52, the strain being from the strain IFO 10746.

54. A proteinase B (*PRB1*) gene DNA encoding an amino acid sequence substantially represented by SEQ ID NO:58.

55. A *PRB1* gene DNA comprising a nucleotide sequence substantially represented by SEQ ID NO:57.

56. An *Ogataea minuta* strain wherein the gene of claim 54 or 55 has been disrupted.

57. An *Ogataea minuta* strain according to claim 56, the strain being from the strain IFO 10746.

58. A *YPS1* gene DNA encoding an amino acid sequence substantially represented by SEQ ID NO:116.

59. A *YPS1* gene DNA comprising a nucleotide sequence substantially represented by SEQ ID NO:115.

60. An *Ogataea minuta* strain wherein the gene of claim 58 or 59 has been disrupted.

61. An *Ogataea minuta* strain according to claim 60, the strain being from the strain IFO 10746.

62. A process for producing a protein encoded by a heterologous gene, wherein the heterologous gene is transferred into the *Ogataea minuta* strain of claim 60 or 61.

63. A process according to claims 62, wherein the heterologous gene encodes an antibody or a fragment thereof.

64. A process for preventing decomposition of an antibody or a fragment thereof, comprising disrupting a *YPS1* gene in a methylotrophic yeast.

65. A process according to claim 64, wherein the methylotrophic yeast is an *Ogataea minuta* strain.

66. A process according to claim 65, wherein the *Ogataea minuta* strain is from the strain IFO 10746.

67. A process according to any one of claims 64 to 66, wherein class of the antibody is IgG.

68. A process according to claim 67, wherein subclass of the IgG is IgG1.

69. A process according to any one of claims 64 to 68, wherein the antibody is a human antibody.

70. A *KTR1* gene DNA encoding an amino acid sequence substantially represented by SEQ ID NO:64.

71. A *KTR1* gene DNA comprising a nucleotide sequence substantially represented by SEQ ID NO:63.

72. An *Ogataea minuta* strain wherein the gene of claim 70 or 71 has been disrupted.

73. An *Ogataea minuta* strain according to claim 72, the strain being from the strain IFO 10746.

74. An *MNN9* gene DNA encoding an amino acid sequence substantially represented by SEQ ID NO:70.

75. An *MNN9* gene DNA comprising a nucleotide sequence substantially represented by SEQ ID NO:69.

76. An *Ogataea minuta* strain wherein the gene of claim 74 or 75 has been disrupted.

77. An *Ogataea minuta* strain according to claim 76, the strain being from the strain IFO 10746.

78. An alcohol oxidase (*AOX*) gene DNA encoding an amino acid sequence substantially represented by SEQ ID NO:78.

79. An *AOX* gene DNA comprising a nucleotide sequence substantially represented by SEQ ID NO:77.

80. A DNA comprising a promoter of alcohol oxidase (*AOX*)gene which is substantially represented by SEQ ID NO:79.

81. A DNA comprising a terminator of alcohol oxidase (*AOX*) gene which is substantially represented by SEQ ID NO:80.

82. A gene expression cassette comprising the DNA comprising the promoter as defined in claim 80, a heterologous gene, and the DNA comprising the terminator as defined in claim 81.

83. A recombinant expression vector comprising the gene expression cassette of claim 82.

84. An *Ogataea minuta* strain transformed with the recombinant expression vector of claim 83.

85. An *Ogataea minuta* strain according to claim 84, the strain being from the strain IFO 10746.

86. A glyceraldehyde-3-phosphate dehydrogenase (GAPDH) gene DNA encoding an amino acid sequence substantially represented by SEQ ID NO:6.

87. A glyceraldehyde-3-phosphate dehydrogenase (GAPDH) gene DNA comprising a nucleotide sequence substantially represented by SEQ ID NO:5.

88. A DNA comprising a promoter of glyceraldehyde-3-phosphate dehydrogenase (GAPDH) gene which is substantially represented by SEQ ID NO:7.

89. A DNA comprising a terminator of glyceraldehyde-3-phosphate dehydrogenase (GAPDH) gene which is substantially represented by SEQ ID NO:8.

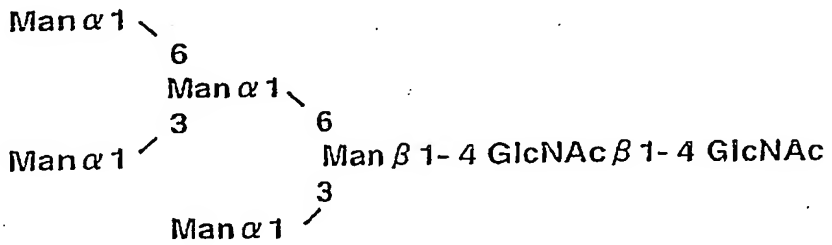
90. A gene expression cassette comprising a DNA comprising the promoter as defined in claim 88, a heterologous gene, and the DNA comprising a terminator as defined in claim 89.

91. A recombinant expression vector comprising the gene expression cassette of claim 90.

92. An *Ogataea minuta* strain transformed with the recombinant expression vector of claim 91.

93. An *Ogataea minuta* strain according to claim 92, the strain being from the strain IFO 10746.

94. A process for producing an *Ogataea minuta* strain, which is capable of producing a mammalian type sugar chain represented by the following structural formula ($Man_5GlcNAc_2$):
Structural Formula 2



comprising a step of disrupting *OCH1* gene (SEQ ID NO:42)in the *Ogataea minuta* strain.

95. A process of claim 94, wherein the *Ogataea minuta* strain is from the strain IFO 10746.

96. A process according to claim 94 or 95, which further comprises a step of disrupting at least one gene selected from the group consisting of a URA*3* gene comprising the nucleotide sequence represented by SEQ ID NO:15, an *ADE1* gene comprising the nucleotide sequence represented by SEQ ID NO:27, an *HIS3* gene comprising the nucleotide sequence represented by SEQ ID NO:99, and a *LEU2* gene comprising the nucleotide sequence represented by SEQ ID NO:107.

97. A process according to any one of claims 94 to 96, which further comprises a step of disrupting at least one gene selected from the group consisting of a *PEP4* gene comprising the nucleotide sequence represented by SEQ ID NO:51, a *PRB1* gene comprising the nucleotide sequence represented by SEQ ID NO:57, and a *YPS1* gene comprising the nucleotide sequence represented by SEQ ID NO:115.

98. A process according to any one of claims 94 to 97, which further comprises a step of disrupting a *KTR1* gene comprising the nucleotide sequence represented by SEQ ID NO:63 and/or an *MNN9* gene comprising the sequence represented by SEQ ID NO:69.

99. A process according to any one of claims 94 to 98, which further comprises a step of introducing and expressing an α-1,2-mannosidase gene from *Aspergillus saitoi*.

100. A process according to claim 99, wherein the α-1,2-mannosidase gene is transferred into the vector of claim 83 and expressed.

101. A process according to any one of claims 94 to 100, which further comprises a step of introducing and expressing a *PDI* gene.

102. A process according to claim 101, wherein the *PDI* gene is a gene (M62815) from *Saccharomyces cerevisiae*.

103. A process according to claim 101 or 102, wherein the *PDI* gene is transferred into the vector of claim 83 and expressed.

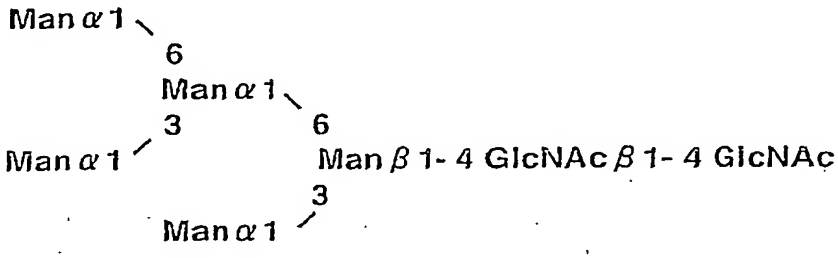
104. A process according to any one of claims 94 to 103, which further comprises a step of introducing and expressing a heterologous gene.

105. A process according to claim 104, wherein the heterologous gene is transferred into the vector of claim 83 and expressed.

106. A process for producing a protein encoded by a heterologous gene, which comprises culturing *Ogataea minuta* produced by the process of claim 104 or 105 in a medium, to obtain the protein comprising a mammalian type sugar chain encoded by the heterologous gene from the culture.

107. A protein comprising a mammalian type sugar chain encoded by a heterologous gene, wherein the protein has been produced by the process of claim 106.

108. A process for producing an *Ogataea minuta* strain, which is capable of producing a mammalian type sugar chain represented by the following structural formula ($Man_5GlcNAc_2$):
Structural Formula 2



wherein the process comprises the steps of:

disrupting an *OCH1* gene comprising the nucleotide sequence represented by SEQ ID NO:42 in an *Ogataea minuta* strain; and

disrupting a URA*3* gene comprising the nucleotide sequence represented by SEQ ID NO:15 in the same strain; and

disrupting a *PEP4* gene comprising the nucleotide sequence represented by SEQ ID NO:51 in the same strain; and

disrupting a *PRB1* gene comprising the nucleotide sequence represented by SEQ ID NO:57 in the same strain.

109. A process according to claim 108, wherein the *Ogataea minuta* strain is from the strain IFO 10746.

110. A process according to claim 108 or 109, which further comprises a step of disrupting an *ADE1* gene comprising the nucleotide sequence represented by SEQ ID NO:27.

111. A process according to claim 110, which further comprises a step of disrupting a *KTR1* gene comprising the nucleotide sequence represented by SEQ ID NO:63.

112. A process according to claim 111, which further comprises a step of disrupting an *HIS3* gene comprising the nucleotide sequence represented by SEQ ID NO:99.

113. A process according to claim 111, which further comprises a step of disrupting a *LEU2* gene comprising the nucleotide sequence represented by SEQ ID NO:107.

114. A process according to claim 111, which further comprises a step of:
1) disrupting a *YPS1* gene comprising the nucleotide sequence represented by SEQ ID NO:115.

115. A process according to any one of claims 108 to 114, which further comprises a step of introducing and expressing an α-1,2-mannosidase gene.

116. A process according to claim 115, wherein the α-1,2-mannosidase gene is transferred into the vector of claim 83 and expressed.

117. A process according to any one of claims 108 to 116, which further comprises a step of introducing and expressing a *PDI* gene (M62815).

118. A process according to claim 117, wherein the *PDI* gene (M62815) is transferred into the vector of claim 83 and expressed.

119. A process according to any one of claims 108 to 118, which further comprises a step of introducing and expressing a heterologous gene.

120. A process according to claim 119, wherein the heterologous gene is transferred into the vector of claim 83 and expressed.

121. A process for producing a protein encoded by a heterologous gene comprising a mammalian type sugar chain, wherein the process comprises culturing *Ogataea minuta* produced by the process of claim 119 or 120 in a medium to obtain the protein from the culture.

122. A protein encoded by a heterologous gene comprising a mammalian type sugar chain, wherein the protein has been produced by the process of claim 121.